



LAWRENCE
LIVERMORE
NATIONAL
LABORATORY

Beam interaction measurements with a Retarding Field Analyzer

M. Kireeff Covo, A. W. Molvik, A. Friedman, J. J.
Barnard, P. Seidl, B. G. Logan, D. Baca, J. L. Vujic

March 28, 2006

16th International Symposium on Heavy Ion Inertial Fusion
Saint-Malo, France
July 9, 2006 through July 14, 2006

Disclaimer

This document was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor the University of California nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or the University of California. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or the University of California, and shall not be used for advertising or product endorsement purposes.

Beam interaction measurements with a Retarding Field Analyzer^{*}

Michel Kireeff Covo

Lawrence Livermore National Laboratory, Heavy-Ion Fusion Science Virtual National
Laboratory, Livermore, California 94550, USA and
University of California at Berkeley, 4155 Etcheverry Hall, MC 1730, Berkeley, CA
94720, USA

Arthur Molvik, Alex Friedman and John J. Barnard

Lawrence Livermore National Laboratory, Heavy-Ion Fusion Science Virtual National
Laboratory, Livermore, California 94550, USA

Peter Seidl, Grant Logan and David Baca

Ernest Orlando Lawrence Berkeley National Laboratory, Heavy-Ion Fusion Science
Virtual National Laboratory, 1 Cyclotron Road, Berkeley, California 94720, USA

Jasmina L. Vujic

University of California at Berkeley, 4155 Etcheverry Hall, MC 1730, Berkeley, CA
94720, USA

A Retarding Field Analyzer (RFA) was designed and inserted in a drift region of a magnetic transport section of the High Current Experiment (HCX). It measures ions or electrons resulting from the beam interaction with the background gas and walls. The ions are expelled during the beam by the space-charge beam potential, and the electrons are expelled mainly at the end of the beam, when the beam potential decays. The measured electrons have a Maxwellian energy distribution and the measured ions have an energy distribution that gives the information of the beam profile, details will be presented and discussed.

* This work performed under the auspices of the U.S Department of Energy by University of California, Lawrence Livermore and Lawrence Berkeley National Laboratories under contracts No. W-7405-Eng-48 and DE-AC03-76SF00098.